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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/796,299	03/09/2004	Jefferson G. Shingleton	PWRL 1029-3	9107
22470	7590	04/10/2007	EXAMINER	
HAYNES BEFFEL & WOLFELD LLP			SMITH, JACKSON R	
P O BOX 366			ART UNIT	PAPER NUMBER
HALF MOON BAY, CA 94019			1709	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		04/10/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/796,299	SHINGLETON ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Jack Smith	1709

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_ is/are allowed.
- 6) Claim(s) 1-35 is/are rejected.
- 7) Claim(s) \_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. ____.
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>See Continuation Sheet</u> .	5) <input type="checkbox"/> Notice of Informal Patent Application
	6) <input type="checkbox"/> Other: ____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :9/1/04, 2/14/06, 4/18/06, 4/19/06.,

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the specific initiations of claims 24 (i.e., "a rail transportation element" included in the modular features of the system of claim 1), 25 (i.e., "a fuel cell charging system" included in the modular features of the system of claim 1), 26 (i.e., "a hydrogen production device" included in the modular features of the system of claim 1), 27 (i.e., "a hydrogen storage device" included in the modular features of the system of claim 1), 28 (i.e., "inverters for converting dc to ac electricity" included in the modular features of the system of claim 1), 29 (i.e., "electrical wireways" included in the modular features of the system of claim 1), 30 (i.e., "elements which facilitate roller skating, ice skating, car shows, horse riding, housing the homeless, farmers markets, soccer matches, tennis matches, concerts, lightshows, fitness, transportation nodes" included in the modular features of the system of claim 1), must be shown or the feature(s) canceled from the claim(s).

No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not

be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 24-27 and 30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains.

As to claim 24, there is no mention in either the specification or the claims as to how to incorporate the rail network into one of the modules of the system of claim 1, nor is there any description of the structure of such a rail network.

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As to claim 25, there is no mention in either the specification or the claims as to how to incorporate the fuel cell charging system into one of the modules of the system of claim 1, nor is there any description of the structure of such a fuel cell charging system.

As to claim 26, there is no mention in either the specification or the claims as to how to incorporate the hydrogen production device into one of the modules of the system of claim 1, nor is there any description of the structure of such a hydrogen production device.

As to claim 27, there is no mention in either the specification or the claims as to how to incorporate the hydrogen storage device into one of the modules of the system of claim 1, nor is there any description of the structure of such a hydrogen storage device.

As to claim 30, there is no mention in either the specification or the claims as to how to incorporate the elements which facilitate roller skating, ice skating, car shows, horse riding, housing the homeless, farmers markets, soccer matches, tennis matches, concerts, lightshows, fitness, transportation nodes into one of the modules of the system of claim 1, nor is there any description of the structure of any such element.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 19-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The intention of claim 19 is to provide “modular features for multi-functionality and customization” as a further limitation to claim 1. However, this limitation is vague and indefinite, particularly given that the system disclosed in claim 1 is already labeled as “a modular shade system.” There is no specific information in this claim with regard to the additional functional features being imparted to or the customization being performed on the system in claim 1 and has been treated as not reciting any further structural limitations.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 2 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Roderick et al. (US Patent 4,233,085).

As to claim 1, Roderick et al. disclose a modular shade system based on a solar panel module (solar panel module, 10) in Figure 1 that comprises: a support structure (frame, 14) defining a first area having a length and a width (i.e., the area encompassed by 14) and modular panels (solar units, 20) that are fixed to the units in ways described in column 4 lines 40-49 (specifically excluding “rigid clamping”, column 4, line 34) that are sufficiently flexible to permit

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removal and/or replacement in modular fashion. Each of said kinds of modular unit has an upper and lower surface, mounted to and supported by the support structure (as illustrated in Figure 1), said modular panels (solar units, 20) covering at least about 80% of the first area (in Figure 1, areal coverage is greater than 90 %), the upper surfaces of the modular panels being exposed surfaces (as shown, the upper surfaces are exposed to incident sunlight, 12). Further, the modular panels (solar units, 20) comprise PV panels and supplemental panels (20 and their supplements); and the supplemental panels provide a feature other than shading (supplemental panels in Figure 1 either provide electrical power converted from solar radiation, or provide a means of distributing that power) and optionally providing shading. That the modules optionally provide shading follows in that they may be constructed of opaque materials as described in column 1 lines 38 – 40 (cadmium sulfide-type photovoltaic cells).

As to claim 2, the system the support structure of Roderick et al. shown in Figure 1 (frame, 14, and wood strips, 16 - 18) comprises: a series of generally parallel purlins (parallel wood strips, 16); beams oriented transversely to said purlins (wood strips 18), said purlins secured to and supported by the columns (frame, 14) secured to and supporting said beams, whereby said purlins define the first shading area (i.e., the area between the wood strips, 16), the length and width measured parallel to and perpendicular to the purlins.

As to claim 19, this claim continues to read on the device of Roderick et al. since no further structural limitations have been recited.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roderick et al. (US Patent 4,233,085) in view of Berman et al. (US Patent 4,663,085).

As to claims 3 – 7, Roderick et al. disclose all the features of claim 1 above but fail to teach that the supplemental panels comprise light-transmissive panels, cover about 0 to 50% or 5 to 30 % of the first area, are placed adjacent to one another along a path parallel to the length, are light transmissive PV panels or that the PV panels and light-transmissive panels cover at least about 90% of the first area.

Berman et al. disclose a light-transmissive solar panel in Figure 1 (transparent photovoltaic panel, 10) which may be used on a roof-top (see Figure 7) to provide transmitted light that is not used for photovoltaic conversion for other purposes such as illuminating the interior of a dwelling (abstract, last sentence). Further, the PV panels of Berman et al. (transparent photovoltaic panel, 10) are light-transmissive PV panels. It would have been obvious to one

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of ordinary skill in the art at the time of the invention to provide the light-transmissive solar panel of Berman et al. to the modular shade system of Roderick et al. in order to provide light for non-photovoltaic purposes such as illuminating the interior of a dwelling.

Further, one of ordinary skill in the art would use the appropriate fraction of light-transmissive PV panels of Berman et al. to provide the desired level of illumination to the interior of a dwelling. This includes, but is not limited to, using light-transmissive PV panels to cover 0 to 50 % or 5 to 30 % of the first area defined by the support structure of Roderick et al. in the context of claim 1 above. Finally, one of ordinary skill in the art would also place the light-transmissive PV panels of Berman et al. as needed including placing them adjacent to one another along a path parallel to the length or to cover up to 90 % of the first area defined by the support structure of Roderick et al. in the context of claim 1 above again in order to provide the desired level of illumination to the interior of a dwelling.

9. Claims 8, 9, 12, 31, 32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roderick et al. (US Patent 4,233,085) in view of Catella et al. (US Patent 4,611,090).

As to claim 8, Roderick et al. discloses all the features of the first part of this claim (i.e., claim 1), above but fails to teach protective panels mounted to the shading system subassembly opposite the lower surfaces of the PV modules.

Catella et al. disclose an assembly (semi-rigid support member, 10) for a structural support for a photovoltaic module in Figure 1. The construction of the

assembly contains a protective panel mounted to the photovoltaic module subassembly in the form of rib stiffeners (20) and a rectangular structure (23) opposite the lower surfaces to the PV modules (as shown with a mounted photovoltaic module, 22, in Figure 4). Catella et al. explain that the purpose of the protective panel is both to support the photovoltaic module (column 6, lines 65 – 8) and to “secure electrical wiring connections between the photovoltaic module and adjacent photovoltaic modules or a current collecting means” (column 7, lines 30-34). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the protective panel of Catella et al. to the modular shade system of Roderick et al. in order to both support the photovoltaic module and secure electrical wiring connections between the photovoltaic module and adjacent photovoltaic modules or a current collecting means.

As to claim 9, Catella et al. further explain that the semi-rigid support member (10) and the protective panel that forms a part of it may be composed of steel, aluminum, plastic (polycarbonate), etc. in column 4, lines 18-28.

As to claim 12, the protective panels of Catella et al. are perforated in the sense that they contain a total of nine holes (see Figure 1).

As to claim 31, Roderick et al. disclose a photovoltaic assembly (solar panel module 10) comprising: a mounting structure (frame, 14); a PV module (20); having upper and lower surfaces (as illustrated in Figure 1), supported by the mounting structure. What Roderick et al. fail to disclose is a protective panel

mounted to at least one of the mounting structure and the PV module opposite the lower surface of the PV module.

Catella et al. disclose an assembly (semi-rigid support member, 10) for a structural support for a photovoltaic module in Figure 1. The construction of the assembly contains a protective panel mounted to the photovoltaic module subassembly in the form of rib stiffeners (20) and a rectangular structure (23) opposite the lower surfaces of the PV modules (as shown with a mounted photovoltaic module, 22, in Figure 4). Catella et al. explain that the purpose of the protective panel is both to support the photovoltaic module (column 6, lines 65 – 8) and to “secure electrical wiring connections between the photovoltaic module and adjacent photovoltaic modules or a current collecting means” (column 7, lines 30-34). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the protective panel of Catella et al. to the modular shade system of Roderick et al. in order to both support the photovoltaic module and secure electrical wiring connections between the photovoltaic module and adjacent photovoltaic modules or a current collecting means.

As to claim 32, Catella et al. further explain that the semi-rigid support member (10) and the protective panel that is a part of it may be composed of steel, aluminum, plastic (polycarbonate), etc. in column 4, lines 18-28.

As to claim 35, the protective panels of Catella et al. are perforated in the sense that they contain a total of nine holes (see Figure 1).

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10. Claim 24 is rejected as being unpatentable over Roderick et al. (US Patent 4,233,085) in view of Pendley (US Patent 7,069,704 B2).

Roderick et al. disclose all the features as discussed above with respect to claims 1 and 19. What Roderick et al. fails to disclose is that the modular features comprise a rail transportation element.

Pendley discloses a roofing rail transportation system (Figures 1 and 3) which has a rail transportation element (rail car, 11) for transporting roofing materials upon an uncompleted roof (abstract, line 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the rail transportation element (11) and system of Pendley to the modular shade system of Roderick et al. in order to transport roofing materials upon an uncompleted roof.

11. Claim 25 is rejected as being unpatentable over Roderick et al. (US Patent 4,233,085) in view of Shugar et al. (US Patent 6,702,370 B2).

Roderick et al. disclose all the features as discussed above with respect to claims 1 and 19. What Roderick et al. fails to disclose is that the modular features comprise a fuel cell charging system.

Shugar et al. discloses an electrical vehicle roof that contains a roof-mounted PV roof assembly (PV roof assembly, 6) that can be used with “fuel-cell powered vehicles” (Figure 1 caption) in order to charge a battery or fuel cell (Column 1, lines 50-54). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the roof mounted PV assembly and

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associated and fuel-cell charging system of Shugar et al. to the modular shade system of Roderick et al. in order to charge a battery or fuel cell.

12. Claim 26 is rejected as being unpatentable over Roderick et al. (US Patent 4,233,085) in view of Kravitz et al. (US Patent 4,106,952).

Roderick et al. disclose all the features as discussed above with respect to claims 1 and 19. What Roderick et al. fails to disclose is that the modular features comprise a hydrogen production device.

Kravitz discloses a solar panel unit (Figures 1 and 2) that can be incorporated as part of a hydrogen production device by providing the electrical energy for the production of hydrogen through electrolysis (Column 4, lines 19-22). Using the solar panel unit in the manner described by Kravitz in the modular shade system of Roderick et al. would ensure that the modular features of the latter comprise a hydrogen production device. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the solar panel unit of Kravitz et al. and associated electrolysis mechanism to the modular shade system of Roderick et al. in order to produce hydrogen through electrolysis.

13. Claim 27 is rejected as being unpatentable over Roderick et al. (US Patent 4,233,085) in view of Scott (US Patent 6,367,573).

Roderick et al. disclose all the features as discussed above with respect to claims 1 and 19. What Roderick et al. fails to disclose is that the modular features comprise a fuel cell charging system.

Scott discloses a cylindrical mount for a fuel system (Figures 1) that stores fuel on the rooftop of a bus using a series of cylindrical tanks. Although

Scott mentions CNG fuel supply specifically, Scott also states in Column 2, lines 8 – 16 that the apparatus is suitable for mounting cylinders regardless of their contents. Such cylinders would be suitable for containing hydrogen or any other gas. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the storage tank assembly of Scott to the modular shade system of Roderick et al. in order to store fuel on a rooftop. Such a system would be capable of storing hydrogen and, therefore, would have modular features comprising a hydrogen storage device.

14. Claim 30 is rejected as being unpatentable over Roderick et al. (US Patent 4,233,085) in view of McCalley (US Patent 6,415,557).

Roderick et al. disclose all the features as discussed above with respect to claims 1 and 19. What Roderick et al. fails to disclose is that the modular features comprise elements which facilitate roller skating, ice skating, car shows, horse riding, housing the homeless, farmers markets, soccer matches, tennis matches, concerts, lightshows, fitness, transportation nodes.

McCalley discloses a modular, above ground protective structure (protective structure, 20) described in Column 3, lines 21-37 and shown in Figure 1 that can be used to provide protective refuge to occupants (Column 3, line 23). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the protective structure of McCalley to the modular shade system of Roderick et al. in order to provide protective refuge to occupants. It is an inherent property of such a structure to also provide shelter to, and therefore facilitate, any number of activities including: roller skating, ice skating, car

shows, horse riding, housing the homeless, farmers markets, soccer matches, tennis matches, concerts, lightshows, fitness. Further, it is also an inherent property of such a structure to provide shelter for, and therefore facilitate, transportation nodes.

15. Claims 10, 13 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roderick et al. (US Patent 4,233,085), Catella et al. (US Patent 4,611,090) as applied to claims 8 and 31 and in further view of Berman et al. (US Patent 4,663,085).

As to claim 10, the combination of Roderick et al. and Catella et al. above discloses all the features of claim 8. Further, the protective panels of Catella et al. have holes between the rib stiffeners (20) that permit some light to pass through as shown in Figure 1. What the combination of Roderick et al. and Catella et al. fails to provide is that the PV modules are constructed to permit some light to pass therethrough.

Berman et al. disclose a light-transmissive solar panel in Figure 1 (transparent photovoltaic panel, 10) which may be used on a roof-top (see Figure 7) to provide transmitted light that is not used for photovoltaic conversion for other purposes such as illuminating the interior of a dwelling (abstract, last sentence). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the light-transmissive solar panel of Berman et al. to the combination of Roderick et al. and Catella et al. as applied to claims 8 and 31 above in order to provide light for non-photovoltaic purposes such as illuminating the interior of a dwelling.

As to claim 13, the combination of Roderick et al. and Catella et al. above discloses all the features of claim 8. Further, the protective panels of Catella et al. have holes between the rib stiffeners (20) that permit some light to pass through as shown in Figure 1. What the combination of Roderick et al. and Catella et al. fails to disclose is that the PV modules cover at least about 90% of the first area.

Berman et al. disclose a light-transmissive solar panel in Figure 1 (transparent photovoltaic panel, 10) which may be used on a roof-top (see Figure 7) to provide transmitted light that is not used for photovoltaic conversion for other purposes such as illuminating the interior of a dwelling (abstract, last sentence). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the light-transmissive solar panel of Berman et al. to the combination of Roderick et al. and Catella et al. above in order to provide light for non-photovoltaic purposes such as illuminating the interior of a dwelling. One of ordinary skill in the art would use the appropriate fraction of light-transmissive solar panels of Berman et al. in order to provide the desired level of illumination to the interior of a dwelling. This includes, but is not limited to, using light-transmissive solar panels to cover up to 90 % of the first area defined by the support structure of Roderick et al. in the context of claim 1 above.

As to claim 33, the combination of Roderick et al. and Catella et al. as applied to claims 8 and 31 above discloses all the features of 31. Further, the protective panels of Catella et al. have holes between the rib stiffeners (20) that permit some light to pass through. What the combination of Roderick et al. and

Catella et al. fails to provide is that the PV modules are constructed to permit some light to pass therethrough.

Berman et al. disclose a light-transmissive solar panel in Figure 1 (transparent photovoltaic panel, 10) which may be used on a roof-top (see Figure 7) to provide transmitted light that is not used for photovoltaic conversion for other purposes such as illuminating the interior of a dwelling (abstract, last sentence). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the light-transmissive solar panel of Berman et al. to the combination of Roderick et al. and Catella et al. above in order to provide light for non-photovoltaic purposes such as illuminating the interior of a dwelling.

16. Claims 11 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roderick et al. (US Patent 4,233,085), Catella et al. (US Patent 4,611,090) as applied to claims 8 and 31 above and in further view of Yamawaki et al. (US patent 6,489,552 B2).

As to claim 11, the combination of Roderick et al. and Catella et al. discloses all the features of claim 8, but fails to teach that the protective panels have a convex lower surface.

Yamawaki et al. disclose a solar cell module (photovoltaic cell module tile body and photovoltaic module, 1 and 6, respectively, in Figure 1A) for covering a roof board. The photovoltaic module tile body (1) acts as a protective panel for the photovoltaic module (6). As Yamawaki et al. teach in column 5, lines 1-3, said photovoltaic tile body has a recessed convex portion (rectangular terminal-box storing recess, 3) which provides a space for the terminal box associated

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with the photovoltaic module or solar cell (6). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the recessed convex portion of the protective panel of Yamawaki et al. to the modular shade system of the combination of Roderick et al. and Catella et al. as applied to claims 8 and 31 above in order to provide a space for the terminal box associated with the solar cell.

As to claim 34, the combination of Roderick et al. and Catella et al. above discloses all the features of claim 31 but fails to teach that the protective panels have a convex lower surface.

Yamawaki et al. discloses a solar cell module (photovoltaic cell module tile body and photovoltaic module, 1 and 6, respectively, in Figure 1A) for covering a roof board. The photovoltaic module tile body (1) acts as a protective panel for the photovoltaic module (6). As Yamawaki et al. teach in column 5, lines 1-3, said photovoltaic tile body has a recessed convex portion (rectangular terminal-box storing recess, 3) which provides a space for the terminal box associated with the photovoltaic module or solar cell (6). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the recessed convex portion of the protective panel of Yamawaki et al. to the modular shade system of Roderick et al. in order to provide a space for the terminal box associated with the solar cell.

17. Claims 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roderick et al. (US Patent 4,233,085) in view of Blieden et al. (US patent 4,153,813).

Roderick et al. discloses all the features of claim 1 above but fail to teach that the supplemental panels comprise phosphorescent panels to provide passive nighttime illumination or that the supplemental panels comprise illuminated panels.

Blieden et al. disclose a luminescent member (16) which consists of a luminescent agent capable of phosphorescence (column 1, line 33-34) that is optically coupled to a photovoltaic cell (18) in Figure 3 . Blieden et al. explain that the purpose of said luminescent member is to aid in the collection of low angle incident light (column 1, lines 57-61). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the luminescent member of Berman et al. to the modular shade system of Roderick et al. in order to aid in the collection of low angle incident light. Doing so would automatically provide passive nighttime illumination beneath the support structure of Roderick et al. Finally, panels in said combination of the devices of Roderick et al. and Blieden et al. are illuminated by virtue of their inclusion of the luminescent member.

18. Claims 15, 17, 18, 20, 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roderick et al. (US Patent 4,233,085) in view of McDonough et al. (US Patent 6,606,823).

As to claim 15, Roderick et al. disclose all the features of claim 1 above but fail to teach that the supplemental panels comprise planter panels for planting of plants.

McDonough et al. disclose a modular roof covering system (Figures 1 – 4) that provides a light weight and low cost roof covering that in order to extend the longevity of the environment, manage store water runoff and collect and utilize solar energy (column 1, lines 39-45). McDonough et al. teach that these modules can be used as planter panels for the planting of plants (Figure 2, and instructions regarding planting “vegetation” in the module in column 5, lines 35-41). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the modules of McDonough et al. (Figure 2) as supplemental panels in the modular shade system of Roderick et al. in order to extend the longevity of the environment.

As to claim 17, Roderick et al. disclose all the features of claim 1 above but fail to teach that the supplemental panels comprise water collection containers.

McDonough et al. disclose a modular roof covering system (Figures 1 – 4) that provides a light weight and low cost roof covering that in order to manage store water runoff and collect and utilize solar energy (column 1, lines 39-45). The panels or modules of McDonough et al. comprise water collection containers (troughs and ridges, 11 and 12, shown in Figure 1) to “provide structural stability and precipitation or water storage capability” (Column 4, lines 10-13). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the water collection containers McDonough et al. (Figure 2) as supplemental panels in the modular shade system of Roderick et al. in order to provide structural stability and precipitation or water storage capability.

As to claim 18, Roderick et al. disclose all the features of claim 1 above but fail to disclose that the supplemental panels comprise space cooling elements comprising at least one of spray misters for evaporative cooling, fans, pumps, wetted canvas, water storage containers, tubing, and evaporative spouts.

McDonough et al. disclose a modular roof covering system (Figures 1 – 4) that provides a light weight and low cost roof covering that in order to extend the longevity of the environment, manage store water runoff and collect and utilize solar energy (column 1, lines 39-45). The panels or modules of McDonough et al. contain a spray mister (sprinkler system, 30 and 31, Figure 4) in order to “provide water irrigation for the vegetation” (Column 2, lines 5-8). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the modules of McDonough et al. (Figure 2) as supplemental panels in the modular shade system of Roderick et al. in order to provide water irrigation for vegetation.

As to claim 20, Roderick et al. disclose all the features of claim 1 above and claim 19 continues to read on the device of Roderick et al. since it cites no further structural limitations. What Roderick et al. fails to disclose is that the modular features include elements for space cooling comprising at least one of spray, fans, pumps, wetted canvas, water storage containers, tubing, and evaporative spouts

McDonough et al. disclose a modular roof covering system (Figures 1 – 4) that provides a light weight and low cost roof covering that in order to extend the longevity of the environment, manage store water runoff and collect and utilize

solar energy (column 1, lines 39-45). The panels or modules of McDonough et al. contain a spray element for space cooling (sprinkler system, 30 and 31, Figure 4) in order to "provide water irrigation for the vegetation or additional cooling for the building" (Column 2, lines 5-8). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the modules of McDonough et al. (Figure 2) as supplemental panels in the modular shade system of Roderick et al. in order to provide additional cooling for the building.

As to claim 23, Roderick et al. disclose all the features of claim 1 above and claim 19 continues to read on the device of Roderick et al. since it cites no further structural limitations. What Roderick et al. fails to disclose is that the modular features modular features comprise at least one of seating elements, planting elements, playground elements, restroom elements, signage elements, antennae modules, payment machines, and stage elements.

McDonough et al. disclose a modular roof covering system (Figures 1 – 4) that provides a light weight and low cost roof covering that in order to extend the longevity of the environment, manage store water runoff and collect and utilize solar energy (column 1, lines 39-45). The panels or modules of McDonough et al. contain comprise a planting element as shown in (Figure 2) and explained in column 5, lines 35-41) in order to support plant growth (Column 1, line 60). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the planting element of McDonough et al. (Figure 2) as supplemental panels in the modular shade system of Roderick et al. in order to support plant growth and extend the longevity of the environment.

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19. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Roderick et al. (US Patent 4,233,085) in view of Nakajima et al. (JP Patent Abstract Publication 10002063A).

Roderick et al. disclose all the features of claim 1 above and claim 19 continues to read on the device of Roderick et al. since it cites no further structural limitations. What Roderick et al. fails to disclose is that the modular features comprise acoustical control panels.

Nakajima et al. disclose a "Lightweight Concrete Roof Tile" as part of a roof covering system (Figures 1 and 4) that is meant to provide shade while both enhancing heat insulation and insulate for sound (abstract, paragraph 57). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the lightweight concrete roof tiles of Nakajima et al. as in the modular shade system of Roderick et al. in order to both enhance heat insulation and insulate for sound.

20. Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roderick et al. (US Patent 4,233,085) in view of West et al. (US Patent 7,099,169 B2).

As to claims 28 and 29, Roderick et al. disclose all the features of claim 1 above and claim 19 continues to read on the device of Roderick et al. since it cites no further structural limitations. What Roderick et al. fails to disclose is that the modular features comprise inverters for converting dc to ac electricity or electrical wireways.

West et al. disclose a full-bridge inverter (as part of the "DC to AC converter," 50) in Figure 1 to convert the erratic DC power produced by an array of solar cells (photovoltaic array, 3) to a standard 120 V AC power usable by a utility grid (utility grid, 60) as explained in column 1 lines 7-11 and lines 31-33. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the full-bridge inverter of West et al. in the modular features of the shade system of Roderick et al. in order to convert the erratic DC power produced by the array of solar cells in the latter to a standard 120 V AC power usable by a utility grid. The full-bridge inverter (50) of West et al. contains multiple electrical wireways as depicted in the circuit diagram of Figure 1.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack Smith whose telephone number is (571) 272-9814. The examiner can normally be reached on 7:30 a.m. - 5:00 p.m., Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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JRS



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